Data Validation Checklist Inorganic Analyses

Project:	35 TH Avenue Superfund Site	Project No:	60430028; 1
Laboratory:	TestAmerica – Savannah, GA	Job ID.:	680-115692-3
Method:	SW-846 6010C (Arsenic and Lead)	Associated Samp	ples: Refer to Attachment A (Sample Summary)
Matrix:	Soil	Samples Collect	ed: 08/12/2015 and 08/13/2015
Reviewer:	Kelly Brannigan, URS Group, Inc.	Date:	01/27/2016
Concurrence ¹ :	Martha Meyers-Lee, URS Group, Inc.	Date:	02/02/2016

	Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
1.	Were sample preservation requirements met? If pH of aqueous sample >2 and was not adjusted by laboratory prior to analysis, J- flag positive results and R- flag non-detect results.	✓				
2.	Were all COC records signed and integrity seals intact, indicating that COC was maintained for all samples?	✓				
3.	Were there any problems noted in laboratory data package concerning condition of samples upon receipt?		√			
4.	Do any soil/sediment samples contain more than 50% water? If yes, then results are to be reported on a wet-weight basis.		√			
5.	Have any technical holding times, determined from date of collection to date of analysis, been exceeded? (Hg: ≤28 days, other metals: ≤6 months; Cr+6: ≤24 hours from extraction). If not, then J- flag positive results and R- flag non-detect aqueous results.		✓			
6.	Were results for all project-specified target analytes reported?	✓				
7.	Were project-specified Reporting Limits achieved for undiluted sample analyses?		√		Resident Soil RSL with THQ = 1.0 (ORNL, November 2015) for target analytes: • Arsenic: 0.68 mg/Kg • Lead: 400 mg/Kg The MDL for lead, but not arsenic, was less than or equal to the respective above-mentioned RSL in all undiluted samples. A data gap does not exist in undiluted soil samples for arsenic, because the metal was detected above the RSL in all samples.	
8.	Were method blank (MB) prepared at the appropriate frequency (one per 20 samples, batch, matrix, and level)?	√				
9.	Was a calibration blank (ICB/CCB) analyzed at the beginning, after every 10 th sample, and at the end of each analytical run?	√				
10.	Were target analytes detected in the method and/or calibration blanks?		✓		Target analytes were not detected in the method blank. Calibration blanks were not evaluated.	

¹ Independent technical reviewer

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	Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
11.	Were target analytes reported in equipment/rinsate blanks analyses above the DL?			√	According to the QAPP, a rinsate blank is to be collected after each decontamination event, which occurs once per week per the client. A rinsate blank is not associated with this sampling event. Blank contamination will be evaluated based on method blank results.	
	Were contaminants detected in samples below the blank contamination action level? o If blank result > RL, • Flag sample results \leq RL with a U • Flag positive sample results > RL and \leq 10x blank result , as J+ positive results o If blank result \leq RL, • Flag sample results \leq RL with a U • Flag positive sample results > RL and \leq 10x blank result , as J+ positive results			√	Target analytes were not detected during the analysis of the method blank. An evaluation of the effect of blank contamination on soil sample results was based on method blank results, and not calibration blank results.	
	Are there negative laboratory blank results with the absolute value \leq RL? If yes, then flag positive and non-detect sample results that are $<$ 10x absolute blank value as J- and UJ, respectively.		>			
14.	Was a field duplicate analyzed?	✓			 680-115692-44 (CV0511Z-CS-6) is a duplicate of 680-115692-45 (CV0511Z -CSD-6). 680-115692-55 (CV0511H-CS-6) is a duplicate of 680-115692-56 (CV0511H -CSD-6). 680-115692-57 (CV0511AA-CS-6) is a duplicate of 680-115692-58 (CV0511AA -CSD-6). 	
15.	Was precision deemed acceptable as defined by the project plans?	✓			Refer to Attachment B (Field Duplicate Evaluation)	J
16.	Were initial and continuing calibration standards analyzed at the lab/project-specified frequency for each instrument? o 6010C: • ICAL: Blank and one standard • ICV initially, and CCV every 10 th sample and at the end of the analytical run • Lower Limit of Quantitation Check Sample (CRI) to be analyzed after establishing lower laboratory reporting limits and as needed o 7471A: • ICAL: Blank and five standards • ICV initially, and CCV every 10 th sample and at the end of the analytical run o 7196A: • ICAL: Blank and minimum of five standards • ICV initially, and CCV every 10 th sample (15 th per Method) and at the end of the analytical run	V			6010C: 08/19/2015 and 08/20/2015. One blank and one standard initially. ICV initially, and CCV every 10 samples and at end of run. CRI after initial calibration blank analysis.	
17.	Were these results within lab/project specifications? ○ 6010C • ICV/CCV (Criteria: 90-110%R): • If %R <75, then J- flag positive results and R-flag non-detects	<u> </u>				

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
 If 75-89%R, then J- flag positive results and UJ flag non-detects If 111-125%R, then J flag positive results If >125%R, then J+ flag positive results If >160%R, then R flag positive results CRI (Method: 70-130%R, Laboratory: 50-150%R; Project: 50-150%R for Sb, Pb, and Tl, and 70-130%R for all other analytes): If CRI %R <50 (<30% for Sb, Pb, TL), then R flag results ≤ 2x RL and J flag positive results >2x RL If CRI %R 50-69% (30-49% for Sb, Pb, TL), then J- and UJ flag positive results <2x RL and ND, respectively If CRI %R >130% and ≤180% (>150%, but ≤200% for Sb, Pb, TL), then J+ flag positive results <2x RL If CRI %R >180% (>200% for Sb, Pb, TL), then R flag 	ı	110	IVA	Samples (Analytes) Affected/Comments	Ing
positive results					
o 7471A					
 ICV/CCV (Criteria: 80-120%R): If correlation coefficients <0.995, then J and UJ flag positive and non-detect results. If %R <65, then J- flag positive results and R-flag non-detects If 65-79%R, then J- flag positive results and UJ flag non-detects If 121-135%R, then J flag positive results If >135%R, then J+ flag positive results If >170%R, then R flag positive results CRI (Method: Not required, Laboratory: 50-150%R, Project: 70-130%R): If CRI %R <50, then R flag results ≤ 2x RL and J flag positive results >2x RL If CRI %R 50-69%, then J- and UJ flag positive results <2x RL and ND, respectively If CRI %R >130% and ≤180%, then J+ flag positive results <2x RL If CRI %R >180%, then R flag positive result 					
o 7196A:					
 ICV/CCV (Criteria: 90-110%R): If correlation coefficients <0.995, then J and UJ flag positive and non-detect results. If %R <65, then J- flag positive results and R-flag non-detects If 65-90%R, then J- flag positive results and UJ flag non-detects If 110-135%R, then J flag positive results If >135%R, then J+ flag positive results If >170%R, then R flag positive results 					

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
18. Was the interference check sample (ICS) analyzed at the beginning of each ICP analytical run?	•				
 19. Are ICS recoveries within 80-120% of the true value? If not, qualify data as follows when native Al, Fe, Ca, and Mg sample concentrations are equal to or greater than the ICS spiking level: If >120%R (or >true value plus 2x CRQL), J+ flag positive results If 50-79%R (or less than true value – 2x the CRQL), J- flag positive results and UJ flag non-detects If <50%R, J- flag positive results and R-flag non-detects 					
20. Was a LCS analyzed for each preparation batch (one per 20 samples per matrix and level)?	✓				
21. Did LCS recoveries meet method/laboratory/project (80-120%R) specifications?	·		·	LCS only	
/project control limits (≤20%RPD)? If not, J and UJ flag positive and non-detect results, respectively.					
23. Was a Matrix Spike (MS) and Matrix Spike Duplicate (MSD) analyzed once per preparation batch?	√			Batch 396757: 680-115692-41 (CV0511Y-CS-12), MS/MSD/PDS	
24. Is the MS and MSD parent sample a project-specific sample?	✓				
25. Was a post-digestion spike (PDS) analysis conducted when MS and/or MSD results did not meet control limits (Note: PDS is not required for silver, mercury, or hexavalent chromium)?	✓				
 26. For all analytes with sample concentration < 4 x spike concentration, are spike recoveries within method (6010C: 75-125%R MS/MSD and 80-120%R PDS; 7471A: 80-120%R MS/MSD; 7196A: 85-115%R MS), laboratory (MS, MSD, and PDS: 75-125%R for 6010C/7471 (as applicable) and 80-120%R for 7196), and project (as noted below) specifications? Only QC results for project samples are evaluated. If not, 6010C: If MS %R <30 and PDS %R <75, then J- and R Flag positive and ND results, respectively If MS %R <30 and PDS %R >75, then J flag positive and UJ flag 		•		CV0511Y-CS-12 (680-115692-41): Arsenic MS and MSD @ 102 and 37%R (75-125%R); PDS @ 91%R (80-120%R). Qualification of data is not warranted, as the MS recovery met control limits.	

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
non-detect results If MS and MSD %R 30-74 and PDS%R <75, then J- flag positive and UJ flag non-detect results If MS and MSD %R 30-74 and PDS%R ≥75, then J flag positive and UJ flag non-detect results If MS, MSD, and PDS %R >125, J+ flag positive results If MS and MSD %R >125 and PDS %R ≤125, then J flag positive results If MS and MSD %R <30 and no PDS, then J- flag positive and R-flag non-detect results If MS and MSD %R 30-74 and no PDS, then J- and UJ flag positive and non-detect results, respectively If MS and MSD %R >125 and no PDS, then J+ flag positive results 7471A/7196: If MS %R <30, then J- and R Flag positive and ND results, respectively If MS and MSD %R 30-LCL, then J- flag positive and UJ flag non-detect results If MS and MSD %R >UCL, then J+ flag positive results					
27. For all analytes with sample concentration < 4 x spike concentration, were laboratory/project (≤20%RPD) criteria met for precision during the MS and MSD analysis? Only QC results for project samples are evaluated. ○ If RPD >20%, J and UJ flag positive and non-detect results.		✓		CV0511Y-CS-12 (680-115692-41): Arsenic @ 24%RPD (≤20%RPD). The arsenic result in sample CV0511Y-CS-12 is estimated (J flagged).	J
28. Was a serial dilution conducted for 6010C/EPA 200.7?	✓				
29. Is the serial dilution parent sample a project-specific sample?	✓			Batch 396757: 680-115692-41 (CV0511Y-CS-12)	
30. Is the percent difference between the serially diluted result and undiluted result less 10% (for those analytes with native concentrations greater than 50x the DL)? Only QC results for project samples are evaluated. o If %D >10, J and UJ flag positive and non-detect results, respectively.	*	√			
31. Was a laboratory duplicate analyzed?32. Was the lab duplicate analysis conducted on a project-specific sample?		٧	√		
33. Were criteria for laboratory/project precision met? Only QC results for project samples are evaluated. o If RPD values >20% (35% for soil/sediment) or absolute difference > RL (2x RL for soil/sediment), then J and UJ flag positive and non-detect results, respectively			▼		
34. Were lab comments included in report? If yes, summarize contents or attach a copy of the narrative.	✓			Refer to Attachment C (Case Narrative)	

Data Validation Checklist (Continued)

Review Questions	Yes No N/A	Samples (Analytes) Affected/Comments	Flag

Comments: The data validation was conducted in accordance with the Non-Industrial Use Property Sampling Event QAPP for the 35th Avenue Removal Site, Birmingham, Alabama, Revision 1 (OTIE, October 2012). The data review process was modeled after the USEPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Inorganic Data Review (EPA 540-R-04-004, October 2004). Sample results have been qualified based on the results of the data review process (Attachment D). Criteria for acceptability of data were based upon available site information, analytical method requirements, guidance documents, and professional judgment

DV Flag Definitions:

- J- The result is an estimated quantity, but the result may be biased low.
- J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- R The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
- U The analyte was analyzed for, but was not detected above the associated level; blank contamination may exist.
- UJ The analyte was analyzed for, but was not detected. The reported limit is approximate and may be inaccurate or imprecise.

Acronyms:

~	-
%	Percent
10	I CICCIII

- %D Percent difference %R Percent recovery °C Degrees Celsius
- °C Degrees Celsius BCAL Blank contamination
- BCAL Blank contamination action level CCB Continuing calibration blank CCV Continuing calibration verification
- CLP Contract laboratory program
- COC Chain-of-custody
- CR+6 Hexavalent chromium
- CRI Lower Limit of Quantitation Check Sample
- CRQL Contract required quantitation limit
- DL Detection limit
 DV Data validation
- EPA Environmental Protection Agency
- ICAL Initial calibration
- ICB Initial calibration blank
- ICP Inductively coupled plasma ICS Interference check sample
- ICV Initial calibration verification
- LCL Lower control limit
- LCS Laboratory control sample
- LCSD Laboratory control sample duplicate
- MDL Method detection limit
- MS Matrix spike
- MSD Matrix spike duplicate
- ND Not detected
- NFG National Functional Guidelines
- PDS Post digestion spike

URS Group, Inc.

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Job ID.: 680-115692-3 **Data Validation Checklist (Continued)**

QC Quality control RL Reporting limit

RPD Relative percent difference

RSL Regional Screening Level. Available: http://www.epa.gov/risk/regional-screening-table [February 2, 2016]

SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA. Available: http://www3.epa.gov/epawaste/hazard/testmethods/index.htm [February 2,

2016]

THQ Target hazard quotients UCL Upper control limit

ATTACHMENT A SAMPLE SUMMARY

SAMPLE SUMMARY

Client: Oneida Total Integrated Enterprises LLC Job Number: 680-115692-3

Sdg Number: 680-115692-03

			Date/Time	Date/Time
Lab Sample ID	Client Sample ID	Client Matrix	Sampled	Received
680-115692-41	CV0511Y-CS-12	Solid	08/12/2015 0945	08/15/2015 1050
680-115692-41MS	CV0511Y-CS-12	Solid	08/12/2015 0945	08/15/2015 1050
680-115692-41MSD	CV0511Y-CS-12	Solid	08/12/2015 0945	08/15/2015 1050
680-115692-42	CV0511Y-CS-18	Solid	08/12/2015 0950	08/15/2015 1050
680-115692-43	CV0511Y-CS-24	Solid	08/12/2015 0955	08/15/2015 1050
680-115692-44	CV0511Z-CS-6	Solid	08/12/2015 1030	08/15/2015 1050
680-115692-45	CV0511Z-CSD-6	Solid	08/12/2015 1030	08/15/2015 1050
680-115692-46	CV0511Z-CS-12	Solid	08/12/2015 1035	08/15/2015 1050
680-115692-47	CV0511Z-CS-18	Solid	08/12/2015 1040	08/15/2015 1050
680-115692-48	CV0511Z-CS-24	Solid	08/12/2015 1045	08/15/2015 1050
680-115692-49	CV0511P-CS-6	Solid	08/12/2015 1110	08/15/2015 1050
680-115692-50	CV0511P-CS-12	Solid	08/12/2015 1115	08/15/2015 1050
680-115692-51	CV0511Q-CS-6	Solid	08/12/2015 1250	08/15/2015 1050
680-115692-52	CV0511Q-CS-12	Solid	08/12/2015 1255	08/15/2015 1050
680-115692-53	CV0511Q-CS-18	Solid	08/12/2015 1300	08/15/2015 1050
680-115692-54	CV0511Q-CS-24	Solid	08/12/2015 1305	08/15/2015 1050
680-115692-55	CV0511H-CS-6	Solid	08/12/2015 1350	08/15/2015 1050
680-115692-56	CV0511H-CSD-6	Solid	08/12/2015 1350	08/15/2015 1050
680-115692-57	CV0511AA-CS-6	Solid	08/13/2015 0800	08/15/2015 1050
680-115692-58	CV0511AA-GSD-6	Solid	08/13/2015 0800	08/15/2015 1050
680-115692-59	CV0511AA-GS-12	Solid	08/13/2015 0805	08/15/2015 1050
680-115692-60	CV0511AA-GS-18	Solid	08/13/2015 0810	08/15/2015 1050

ATTACHMENT B FIELD DUPLICATE EVALUATION

Analyte	680-115692-44 CV0511Z-CS-6	RL	680-115692-45 CV0511Z-CSD-6	RL	Unit	Avg. RLx5	RPD	Absolute difference	_	Action
Arsenic	22	2.1	20	2.1	mg/kg	10.5	10	NA	NA	None, RPD $\leq 50\%$
Lead	24	1.1	30	1.1	mg/kg	5.5	22	NA	NA	None, RPD $\leq 50\%$

Note: If the analyte was not detected, then the cell was left blank.

mg/kg - Milligrams per kilogram

NA - Not applicable

RL - Reporting limit

RPD - Relative percent difference

Precision is based on either the absolute difference between sample results or RPD. If the sample results are less than or equal to 5x's the RL, then precision is based on the absolute difference between duplicate results. If sample results >5x's RL, then precision is evaluated using RPD. J-Flag sample results whenever the absolute difference is greater than the RL (2x for soils) or the RPD >20% (50% for soil). Table above presents the results for detected analytes only.

Analyte	680-115692-55 CV0511H-CS-6	RL	680-115692-56 CV0511H-CSD-6	RL	Unit	Avg. RLx5	RPD	Absolute difference	_	Action
Arsenic	25	1.9	18	1.9	mg/kg	9.5	33	NA	NA	None, RPD $\leq 50\%$
Lead	74	9.7	74	9.6	mg/kg	48.25	0	NA	NA	None, RPD $\leq 50\%$

Note: If the analyte was not detected, then the cell was left blank.

mg/kg - Milligrams per kilogram

NA - Not applicable

RL - Reporting limit

RPD - Relative percent difference

Precision is based on either the absolute difference between sample results or RPD. If the sample results are less than or equal to 5x's the RL, then precision is based on the absolute difference between duplicate results. If sample results >5x's RL, then precision is evaluated using RPD. J-Flag sample results whenever the absolute difference is greater than the RL (2x for soils) or the RPD >20% (50% for soil). Table above presents the results for detected analytes only.

Analyte	680-115692-57 CV0511Z-CS-6	RL	680-115692-58 CV0511Z-CSD-6	RL	Unit	Avg. RLx5	RPD	Absolute difference	2x Avg RL	Action
Arsenic	33	2.1	21	2.0	mg/kg	10.25	44	NA	NA	None, RPD $\leq 50\%$
Lead	40	1.0	140	10	mg/kg	27.5	111	NA	NA	J/UJ-flag, RPD > 50%

Note: If the analyte was not detected, then the cell was left blank.

mg/kg - Milligrams per kilogram

NA - Not applicable

RL - Reporting limit

RPD - Relative percent difference

Precision is based on either the absolute difference between sample results or RPD. If the sample results are less than or equal to 5x's the RL, then precision is based on the absolute difference between duplicate results. If sample results >5x's RL, then precision is evaluated using RPD. J-Flag sample results whenever the absolute difference is greater than the RL (2x for soils) or the RPD >20% (50% for soil). Table above presents the results for detected analytes only.

ATTACHMENT C
CASE NARRATIVE

CASE NARRATIVE

Client: Oneida Total Integrated Enterprises LLC Project: 35th Avenue Superfund Site

Report Number: 680-115692-3

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 8/15/2015 10:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.8° C and 3.4° C.

SEMIVOLATILE ORGANIC COMPOUNDS (GC/MS) LOW LEVEL PAH

Samples CV0511Y-CS-12 (680-115692-41), CV0511Y-CS-18 (680-115692-42), CV0511Y-CS-24 (680-115692-43), CV0511Z-CS-6 (680-115692-44), CV0511Z-CSD-6 (680-115692-45), CV0511Z-CS-12 (680-115692-46), CV0511Z-CS-18 (680-115692-47), CV0511Z-CS-24 (680-115692-48), CV0511Z-CS-12 (680-115692-50), CV0511Z-CS-6 (680-115692-51), CV0511Z-CS-12 (680-115692-52), CV0511Z-CS-12 (680-115692-53), CV0511Z-CS-24 (680-115692-54), CV0511Z-CS-12 (680-115692-52), CV051Z-CS-13 (680-115692-53), CV051Z-CS-24 (680-115692-54), CV051Z-CS-16 (680-115692-55), CV05ZZ-CS-16 (680-115692-56), CV05ZZ-CS-16 (680-115692-57), CV05ZZ-CS-16 (680-12692-58), CV05ZZ-CS-16 (680-12692-68), CV05ZZ-CS-17 (680-12692-68), CV05ZZ-CS-18 (680-12692-68), CV05ZZ

Method(s) 8270D_LL_PAH: The following sample(s) required a dilution due to the nature of the sample matrix: CV0511Z-CSD-6 (680-115692-45[10.0]), CV0511Z-CS-12 (680-115692-46[10.0]), CV0511Q-CS-6 (680-115692-51[10.0]), CV0511H-CS-6 (680-115692-55[10.0]) and CV0511H-CSD-6 (680-115692-56[10.0]). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method(s) 8270D_LL_PAH: The continuing calibration verification (CCV) analyzed in batch 680-396964 was outside the method criteria for the following analyte(s): Dibenz(a,h)anthracene, Fluoranthene, Indeno[1,2,3-cd]pyrene and o-Terphenyl . A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method(s) 8270D_LL_PAH: The minimum response factor (RF) criteria for the continuing calibration verification (CCV) analyzed in batch 680-396961 was outside criteria for the following analyte(s): Anthracene. As indicated in the reference method, sample analysis may proceed; however, any detection or non-detection for the affected analyte(s) is considered estimated.

Method(s) 8270D_LL_PAH: The following samples required a dilution due to the abundance of target analytes and the nature of the sample matrix: CV0511Y-CS-12 (680-115692-41), CV0511Y-CS-12 (680-115692-41[MS]) and CV0511Y-CS-12 (680-115692-41[MSD]). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Several analytes have recovery outside criteria high for the MS of sample CV0511Y-CS-12MS (680-115692-41) in batch 680-397188.

Several analytes have recovery outside criteria low for the MSD of sample CV0511Y-CS-12 (680-115692-41) in batch 680-397188. Several analytes exceeded the RPD limit.

Refer to the QC report for details.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

METALS (ICP)

Samples CV0511Y-CS-12 (680-115692-41), CV0511Y-CS-18 (680-115692-42), CV0511Y-CS-24 (680-115692-43), CV0511Z-CS-6 (680-115692-44), CV0511Z-CSD-6 (680-115692-45), CV0511Z-CS-12 (680-115692-46), CV0511Z-CS-18 (680-115692-47), CV0511Z-CS-24 (680-115692-48), CV0511P-CS-6 (680-115692-49), CV0511P-CS-12 (680-115692-50), CV0511Q-CS-6 (680-115692-51), CV0511Q-CS-12 (680-115692-52), CV0511Q-CS-18 (680-115692-53), CV0511Q-CS-24 (680-115692-54), CV0511H-CS-6 (680-115692-55), CV0511H-CSD-6 (680-115692-56), CV0511AA-CS-6 (680-115692-57), CV0511AA-GSD-6 (680-115692-58), CV0511AA-GS-12 (680-115692-59) and CV0511AA-GS-18 (680-115692-60) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/18/2015 and analyzed on 08/19/2015 and 08/20/2015.

Arsenic recovery is outside criteria low for the MSD of sample CV0511Y-CS-12 (680-115692-41) in batch 680-397264. Arsenic exceeded the RPD limit.

Refer to the QC report for details.

Samples CV0511Y-CS-24 (680-115692-43)[10X], CV0511Z-CS-18 (680-115692-47)[10X], CV0511Z-CS-24 (680-115692-48)[10X], CV0511Q-CS-24 (680-115692-54)[10X], CV0511H-CS-6 (680-115692-55)[10X], CV0511H-CSD-6 (680-115692-56)[10X], CV0511AA-GSD-6 (680-115692-58)[10X], CV0511AA-GS-12 (680-115692-59)[20X] and CV0511AA-GS-18 (680-115692-60)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS/MOISTURE

Samples CV0511Y-CS-12 (680-115692-41), CV0511Y-CS-18 (680-115692-42), CV0511Y-CS-24 (680-115692-43), CV0511Z-CS-6 (680-115692-44), CV0511Z-CSD-6 (680-115692-45), CV0511Z-CS-12 (680-115692-46), CV0511Z-CS-18 (680-115692-47), CV0511Z-CS-24 (680-115692-48), CV0511Z-CS-24 (680-115692-48), CV0511Z-CS-6 (680-115692-51), CV0511Q-CS-12 (680-115692-52), CV0511Q-CS-18 (680-115692-53), CV0511Q-CS-24 (680-115692-54), CV0511H-CS-6 (680-115692-55), CV0511H-CSD-6 (680-115692-56), CV0511AA-CS-6 (680-115692-57), CV0511AA-GSD-6 (680-115692-58), CV0511AA-GS-12 (680-115692-59) and CV0511AA-GS-18 (680-115692-60) were analyzed for Percent Solids/Moisture in accordance with TestAmerica SOP. The samples were analyzed on 08/18/2015.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ATTACHMENT D QUALIFIED SAMPLE RESULTS

Lab Name: TestAmerica Savannah Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid Date Sampled: 08/12/2015 09:45

Reporting Basis DRY Date Received: 08/15/2015 10:50

% Solids: 81.4

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methodi
7440-38-2	Arsenic	24	3 2.4	0.95	mg/Kg		F1 J	1	6010C
7439-92-1	Lead	35	1.2	0.40	mg/Kg	 	72	1	6010C

2017)

I (OTIE, October

Client Sample ID: CV0511Y-CS-18

Lab Sample ID: 680-115692-42

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 09:50

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 87.2

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	27	2.0	0.79	mg/Kg			1	6010C
7439-92-1	Lead	41	0.99	0.34	mg/Kg			1	6010C ₹

2012)

1 (OTIE, October

Client Sample ID: CV0511Y-CS-24

Lab Sample ID: 680-115692-43

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 09:55

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 86.3

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	26	2.1	0.82	mg/Kg			1	6010C
7439-92-1	Lead	56	10	3.5	mg/Kg	1		10	6010C <

08/25/2015

1 (OTIE, October 2013)

Client Sample ID: CV0511Z-CS-6

Lab Sample ID: 680-115692-44

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 10:30

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 83.8

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methodi
7440-38-2	Arsenic	22	2.1	0.86	mg/Kg	1		1	6010C
7439-92-1	Lead	24	1.1	0.37	mg/Kg			1	6010C ₹

201

I (OTIE, October

Client Sample ID: CV0511Z-CSD-6

Lab Sample ID: 680-115692-45

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 10:30

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 80.7

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methodi
7440-38-2	Arsenic	20	2.1	0.85	mg/Kg			1	6010C
7439-92-1	Lead	30	1.1	0.36	mg/Kg			1	6010C <

1 (OTIE, October 2013)

Client Sample ID: CV0511Z-CS-12

Lab Sample ID: 680-115692-46

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

atrix: Soli	.d			Date Sampl	ed:	08/12/2	2015	10:35		1 201
eporting Bas	sis DRY	= = =		Date Recei	ved:	08/15	/2015	10:50		Octob
Solids: 8	3.3									ŢE
_	THE SAME TIME									9
CAS No.	Analyte	Result	RL	MDL	Uni	ts	С	Q	DIL	Method
CAS No.	Analyte Arsenic	Result 22	RL 2.2	MDL 0.88	Uni mg/K	11_	С	Q	DIL 1	Method

Client Sample ID: CV0511Z-CS-18

Lab Sample ID: 680-115692-47

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 10:40

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 83.0

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	31	2.2	0.89	mg/Kg			1	6010C
7439-92-1	Lead	77	11	3.8	mg/Kg			10	6010C 4

I (OTIE, October 2013)

Client Sample ID: CV0511Z-CS-24

Lab Sample ID: 680-115692-48

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 10:45

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 84.6

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	30	2.0	0.79	mg/Kg			1	6010C 2
7439-92-1	Lead	51	9.9	3.4	mg/Kg			10	6010C 국

Client Sample ID: CV0511P-CS-6 Lab Sample ID: 680-115692-49

Lab Name: TestAmerica Savannah Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid Date Sampled: 08/12/2015 11:10

MULTIN.				pace pambi	reu.					- H
Reporting Bas	sis DRY			Date Recei	lved:	08/15	5/2015	10:50		Octub
Solids: 90	0.3									I (OTIE,
CAS No.	Analyte	Result	RL	MDL	Uni	ts	С	Q	DIL	Methogi Methogi
7440-38-2	Arsenic	30]	1.9	0.78	mg/Kg	3 1			1	6010C
7439-92-1	Lead	61	0.97	0.33	mq/Kd	1			1	6010C <

2012)

Client Sample ID: CV0511P-CS-12

Lab Sample ID: 680-115692-50

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

atrix: Soli	d			Date Sampl	ed:	8/12/	2015	11:15		13013
eporting Bas	sis DRY			Date Recei	.ved:	08/15	/2015	10:50		October
Solids: 8	6.7									TTE
CAS No.	Analyte	Result	RL	MDL	Uni	ts	С	Q	DIL	Method
CAS No.	Analyte Arsenic	Result 14	RL 2.1	MDL 0.85	Uni mg/Kg		С	Q	DIL	Methodd 6010C

Client Sample ID: CV0511Q-CS-6

Lab Sample ID: 680-115692-51

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 12:50

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 89.4

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methodi Methodi
7440-38-2	Arsenic	31	2.0	0.79	mg/Kg			1	6010C
7439-92-1	Lead	47	0.99	0.34	mg/Kg	<u> </u>		1	6010C ₹

Sample results have been qualified by URS in accordance with the Non-Industrial Use Property Sampling Event QAPP for the 35th Avenue Removal Sile, Birmingham

2013)

Client Sample ID: CV0511Q-CS-12

Lab Sample ID: 680-115692-52

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 12:55

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eporting Basis	DRY			Date Recei	.ved:	08/15	/2015	10:50		Octobe
Solids: 86.	5						The second second			(OTIE,
CAS No.	Analyte	Result	RL	MDL	Unit	s	С	Q	DIL	Method
7440-38-2	Arsenic	24	2.1	0.85	mg/Kg	-			1	6010C
7439-92-1	Lead	57	1.1	0.36	mg/Kg				1	6010C ₹

2013

Client Sample ID: CV0511Q-CS-18

Lab Sample ID: 680-115692-53

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 13:00

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 87.1

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	25	2.0	0.79	mg/Kg			1	6010C
7439-92-1	Lead	95	0.99	0.34	mg/Kg			1	6010C 2

1 (OTIE, October 2013)

Client Sample ID: CV0511Q-CS-24

Lab Sample ID: 680-115692-54

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

atrix: Soli	ıa			Date Sampl	.ed:	08/12/2		25		
eporting Ba	sis DRY		Date Received:		08/15/2015 10:50					
Solids: 8	5.4									OTIE
										7
CAS No.	Analyte	Result	RL	MDL	Uni	ts	С	Q	DIL	Metho
CAS No.	Analyte	Result 31	RL 2.0	MDL 0.81	Uni mg/Kg		С	Q	DIL 1	Method

Client Sample ID: CV0511H-CS-6

Lab Sample ID: 680-115692-55

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/12/2015 13:50

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 89.0

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	25	1.9	0.78	mg/Kg			1	6010C
7439-92-1	Lead	74	9.7	3.3	mg/Kg			10	6010C <

1 (OTIE, October 2012)

Client Sample ID: CV0511H-CSD-6 Lab Sample ID: 680-115692-56 Job No.: 680-115692-3

Lab Name: TestAmerica Savannah

SDG ID.: 680-115692-03

Matrix: Solid Date Sampled: 08/12/2015 13:50

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				Date Samps	reu.				by
Reporting Bas	is DRY			Date Recei	Lved:	08/15/2015	10:50		Octob
% Solids: 91	1.0								I (OTIE.
CAS No.	Analyte	Result	RL	MDL	Unit	5 C	Q	DIL	Methodd Methodd
7440-38-2	Arsenic	18	1.9	0.77	mg/Kg			1	6010C
7439-92-1	Lead	74	9.6	3.3	mg/Kg			10	6010C ₹

2013)

Client Sample ID: CV0511AA-CS-6

Lab Sample ID: 680-115692-57

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/13/2015 08:00

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 86.6

	CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methood
ľ	7440-38-2	Arsenic	33	2.1	0.82	mg/Kg	l l		1	6010C
	7439-92-1	Lead	40	1.0	0.35	mg/Kg	†	J	1	6010C ₹

l (OTIE, October 2013)

Client Sample ID: CV0511AA-GSD-6

Lab Sample ID: 680-115692-58

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/13/2015 08:00

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 87.2

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methald
7440-38-2	Arsenic	21	2.0	0.82	mg/Kg			1	6010C
7439-92-1	Lead	140	10	3.5	mg/Kg		J	10	6010C ₹

2012)

I (OTIE, October

Client Sample ID: CV0511AA-GS-12

Lab Sample ID: 680-115692-59

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/13/2015 08:05

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 82.1

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Method
7440-38-2	Arsenic	34	2.1	0.83	mg/Kg			1	6010C
7439-92-1	Lead	52	21	7.0	mg/Kg			20	6010C 4

2012

1 (OTIE, October

Client Sample ID: CV0511AA-GS-18

Lab Sample ID: 680-115692-60

Lab Name: TestAmerica Savannah

Job No.: 680-115692-3

SDG ID.: 680-115692-03

Matrix: Solid

Date Sampled: 08/13/2015 08:10

Reporting Basis DRY

Date Received: 08/15/2015 10:50

% Solids: 87.0

CAS No.	Analyte	Result	RL	MDL	Units	С	Q	DIL	Methodi
7440-38-2	Arsenic	68	20	8.0	mg/Kg			10	6010C
7439-92-1	Lead	54	10	3.4	mg/Kg			10	6010C <

2012)

I (OTIE, October